Remarks

The Office Action dated February 9, 2009 has been carefully considered. Claim 13 has been amended without addition of new matter. Reconsideration of the claims is respectfully requested.

Interview Summary

The Attorney for the Applicants wishes to thank Examiners Chapman and Zalukaeva for the helpful interview held on 25 February 2009, and agrees with the Interview Summary dated 3/9/2009 prepared by Examiner Chapman.

Claim Rejections – 35 USC § 112

In the Office Action, claim 1 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. Claim 1 has been amended to change the 0.5% by weight of a cationic polymeric coating to 0.63% as found on page 19, in Table 2 line 8, column 2 of the specification. Withdrawal of this claim rejection is respectfully requested.

Claim Rejections – 35 USC § 103

In Paragraph 3 of the Office Action, claims 13-18, 20-21, 23-25, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beihoffer et al (US 6,509,512 B1) in view of Tanaka et al (US 5,274,018). This rejection is respectfully traversed for the following reasons, many of which were presented in the Interview of 25 February 2009.

Pursuant to the factual inquiries set forth in Graham v. John Deere, the background of the present invention and the references are directed superabsorbent polymers (SAP) including an electrolyte polymer, which captures the water or urine. Such SAP polymers in the present

application and commercial applications are generally polyacrylates that are partially neutralized, and slightly crosslinked. The polymers must be slightly crosslinked to avoid solubilization in water and they must be partially neutralized so that an acceptable pH range of 5-7 is obtained. Monomers for such SAP polymers are polymerized and processed into superabsorbent particles that have a range of particle size suitable for diapers and provide comfort for the wearer. The SAP particles are surface crosslinked to provide suitable strength of the particles so that the particles are not squashed when a wearer sits on the diaper. The present invention is specifically directed to what are called acidic type superabsorbent polymers, such as polyacrylates for example, which make up over 95% of the SAP market.

The present claims have been rejected in the 2/9/2009 Office Action over Beihoffer in view of Tanaka. Beihoffer is directed to multicomponent superabsorbent gel particles, which *comprise at least one acidic water-absorbing resin and at least one basic water-absorbing resin. Each particle contains microdomains of the acidic resin and/or the basic resin homogeneously dispersed throughout the particle.* (Abstract) Beihoffer discloses that multicomponent superabsorbent gel particles overcome the problem called salt poisoning associated with polyacrylate superabsorbent polymers, the subject matter of the present application.

As will be discussed herein, Beihoffer clearly teaches away from using an acidic type polyacrylate superabsorbent as set forth in the present claims. Beihoffer explains the problem of salt poisoning (C1, l-45 to C2, l-36) beginning with background that *the dramatic swelling and absorbent properties of SAPs are attributed to (a) electrostatic repulsion between the charges along the polymer chains, and (b) osmotic pressure of the counter ions. It is known,*

however, that these absorption properties are drastically reduced in solutions containing electrolytes, such as saline, urine, and blood. The polymers do not function as effective SAPs in the presence of such physiologic fluids.

The decreased absorbency of electrolyte-containing liquids is illustrated by the absorption properties of a typical, commercially available SAP, i.e., sodium polyacrylate. This dramatic decrease in absorption is termed "salt poisoning." Therefore, to provide an SAP that is less susceptible to salt poisoning, either an SAP different from neutralized polyacrylic acid must be developed, or the neutralized polyacrylic acid must be modified or treated to at least partially overcome the salt poisoning effect.

Beihoffer discloses various references which individually disclose combinations that attempt to overcome the salt poisoning effect. In general, the references merely teach the admixture of two types of particles, and do not suggest a single particle containing individual microdomains of an acidic resin and/or a basic resin. Beihoffer discloses single particle multicomponent SAPs comprising at least one acidic water-absorbing resin, like a polyacrylic acid, and at least one basic water-absorbing resin, like a poly(dialkylaminoalkyl acrylamide). Beihoffer discloses that each of the polyacrylic acid and basic water-absorbing resins are suitably crosslinked (C5 ll 5-8), and the resins may be surface crosslinked and the multicomponent SAP may be surface crosslinked (C12, ll 60-62).

On the other hand, the present invention is directed to acidic type SAP particles that have higher permeability due to surface treatment of the particles with a noncrosslinked cationic polymer. Permeability is a measure of the intake rate of the SAP which is a function of the absorption of the individual particles and the ability of fluid to reach the inner particles in

a structure by passage through channels between particles. One problem that exists is the blockage of the channels that stops fluid from flowing into interior SAP particles. This is generally called "gel blocking." In such cases, only the SAP particles of the structure absorb fluid while the SAP particles on the interior remain unused. The ability to maintain openness of and accessability to channels and void volume within an absorbent structure is a function of the gel bed permeability under load of the SAP in the structure.

Based on the foregoing factual inquiries according to Graham v. John Deere, there are significant differences between the Beihoffer reference and the claims of the present invention. The claims of the present invention are directed to surface treated SAP comprising a SAP consisting of an anionic polymer and internal crosslinking that has a degree of neutralization of greater than 25% wherein the SAP polymer is made into particles that are surface crosslinked and treated with from 0.63% to about 5% by weight of a non-crosslinked cationic polymer.

To summarize, key differences between the prior art reference Beihoffer et al. and the claims of the present invention include the following:

1. The superabsorbent polymer in the claims of the present invention only includes one acidic type water absorber resin whereas Beihoffer requires the multicomponent superabsorbent gel particles to include at least one acidic water-absorbing resin and at least one basic water-absorbing resin. Along this line, Beihoffer clearly teaches away from an acidic superabsorbent polymer as set forth in the present claims.

2. The superabsorber polymer particles in the claims of the present invention are surface treated with from about 0.63% to about 5% by weight of a non-crosslinked cationic polymeric coating. Beihoffer discloses surface treating the multicomponent particles with a surface crosslinker, but does not disclose or suggest to surface treat the multicomponent particles with a non-crosslinked cationic polymer.

Tanaka et al. discloses an absorbent that has at least the following two components: (a) a swellable hydrophobic polymer being capable of absorbing a quantity of water which is at least about 10 times the dry weight of said polymer; and (b) an amount of an ionizable surfactant sufficient to form at least a monolayer of said surfactant about said polymer. Tanaka et al. fails to disclose a SAP particle as set forth in the present invention. Fig 1. shows a "fiber" type hydrophobic polymer surrounded by at a least a monolayer of the ionizable surfactant. Tanaka et al fails to disclose the SAP of the present invention. Tanaka et al. is cited in the Office Action to be combined with Beihoffer for disclosing for the weight amounts of cationic polymer coating. Tanaka et al. teaches coating the hydrophobic polymer with an ionizable surfactant, not a non-crosslinked cationic polymer as set forth in the present claims.

In view of the amendment to claim 13 and the foregoing remarks, it is respectfully asserted that the rejection of claims 13-18, 20-21, 23-25, and 40 under 35 U.S.C. 103(a) as being unpatentable over Beihoffer et al in view of Tanaka et al has been overcome and that the rejection be withdrawn.

Conclusion

In light of the amendments and remarks presented herein, Applicants submit that the present application is in condition for allowance, and such action is respectfully requested. If, however, any issues remain unresolved, the Examiner is invited to telephone Applicants' counsel at the number provided below.

Respectfully submitted,

/Philip P. McCann/

Philip P. McCann
Registration No. 30,919

SMITH MOORE LEATHERWOOD LLP
P.O. Box 21927
Greensboro, NC 27420
(336) 378-5302
phil.mccann@smithmoorelaw.com

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